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UNDERSTANDING THE INTERNET BANKING ADOPTION BY PORTUGUESE CUSTOMERS

A Unified Theory of Acceptance and Use of Technology and Perceived Risk Application

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Trabalho de Projecto apresentado como requisito parcial para obtenção do grau de Mestre em Estatística e Gestão de Informação

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Understanding the Internet Banking Adoption by Portuguese Customers: a *Unified Theory of Acceptance and Use of Technology* and *Perceived Risk* Application

by

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Project work presented as a partial requirement to obtain the master degree in Statistics and Information Management, with specialization in Knowledge Management and Business Intelligence

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RESUMO

A percepção dos factores que mais contribuem para a adopção do Internet banking é importante para os bancos e para os utilizadores. Se os bancos compreenderem as principais preocupações e opiniões dos utilizadores, então serão capazes de prestar melhores serviços aos seus clientes. Nesta investigação, foi desenvolvido um modelo conceptual que combina a teoria unificada da aceitação e uso de tecnologia (UTAUT) com o risco percebido, de forma a explicar e intenção e o uso do Internet banking. Para testar o modelo concetual, foram recolhidos dados em Portugal (249 casos válidos). Os resultados mostraram que o modelo explicava 60% da intenção e 81 % do uso. Foram suportadas algumas das relações do UTAUT, como a expectativa de desempenho, expectativa de esforço e a influência social, e também o papel do risco como o forte preditor da intenção. Para explicar o uso do Internet banking, o factor mais importante foi a intenção.

PALAVRAS-CHAVE

Teoria unificada da aceitação e uso de tecnologia (UTAUT); risco percebido; adopção de tecnologias de informação; Internet banking; Portugal

ABSTRACT

The understanding of the main determinants of Internet banking adoption is important for banks and users. If banks understand users' concerns, then they will be able to provide better services. In this investigation we developed a conceptual model that combined the unified theory of acceptance and use of technology (UTAUT) with perceived risk in order to explain behaviour intention and usage behaviour of Internet banking. To test the conceptual model we collected data from Portugal (249 valid cases). We found that the model explained 60 percent of intention to use variance and 81 percent of usage variance. Our findings supported some relationships of UTAUT, as performance expectancy, effort expectancy and social influence, and also the role of risk as a stronger predictor of intention. To explain usage behaviour of Internet banking the most important factor was behavioural intention.

KEYWORDS

Unified theory of acceptance and use of technology (UTAUT); perceived risk; information technology adoption; Internet banking; Portugal

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ACRONYMS AND ABBREVIATIONS

UTAUT	Unified Theory of Acceptance and Usage of Technology
PLS	Partial Least Squares
TAM	Theory of Acceptance Model
TPB	Theory of Planned Behaviour
CR	Composite Reliability
AVE	Average Variance Extracted
PE	Performance Expectancy
EE	Effort Expectancy
SI	Social Influence
FC	Facilitating Conditions
BI	Behaviour Intention
UB	Usage Behaviour
PCR	Perceived Risk
PFR	Performance Risk
FR	Financial Risk
TR	Time Risk
PSR	Psychological Risk
SR	Social Risk
PR	Privacy Risk
OR	Overall Risk

I - INTRODUCTION

In the past years, Internet has been growing and has been offering many web-based applications as a new way of retaining and offering new services and products to their customers (Tan & Teo, 2000). In order to both parties (customers and organizations) take advantage of these applications, it is crucial to analyse the real perception and the main reasons of people's willingness to adopt these technologies (Liao & Cheung, 2002; Lee, 2009).

The aim of this study is to understand the determinants of Internet banking adoption, that is, the system that enable bank customers to get access to their accounts in order to perform a set of activities (transfers, bill-payments, etc.) through the bank's website. As our investigation merges two sensitive subjects, namely money and Internet, there is always a risk factor that is important to be measured on the process of Internet banking adoption. For this reason, it will be added to unified theory of acceptance and use of technology (UTAUT) model the perceived risk construct (Featherman & Pavlou, 2003), that is, the feeling of uncertainty regarding possible negative consequences of using the Internet banking service. Our research merges an existent and empirically validated theoretical model with a perceived risk factor, which is also an important construct that will be tested on the adoption of Internet banking for the first time. Thus, this study may help banks to understand the determinant factors that influence users and then to create the right policies and actions to attract customers to use this service. Additionally, it is on the banks and clients interest to direct their communication from bank branches to online channels in order to be more productive and cost-effective for both parties.

Regarding the structure of the present article, section II contains the theoretical background, namely the concept of Internet banking, the current theories that explain customers' acceptance of technology and the definition of perceived risk and previous research on this topic. Then, in Section III it will be presented the research model; next, section IV contains the method used on the investigation, as the description of measurement instruments and the process of data collection. In section V and VI data analysis is performed and discussion presented, respectively. Finally, section VII contains the main conclusions.

II - THEORETICAL BACKGROUND

This section is comprised in three sub-sections. The first one describes and discusses the concept of Internet banking; the second provides a summary of the current theories and models that can be used to explain the customers' acceptance of technology, namely the ones used to build the UTAUT model; finally, the third section addresses previous research in perceived risk and their importance in consumer behaviour, as explaining the adoption of Internet banking.

II.1.The Concept of Internet Banking

Concerning the increasing innovation and the urgent need of up-to-date, convenient and reliable data, information systems gained a high importance in the organizational context. Against this background, it is being established a high dependency between the organizations performance and their information systems. These organizations can now profit from the evolution of new technologies and adapt to the emergent ways of interacting with their clients. Banking sector has emerged on this need and has been using information systems, not only to promote products, but also to provide main services to their customers. The dematerialization of customer relationships, that is, the better use of the numerous new information and communication technologies available in the market, is the present challenge of this sector. This adjustment will allow clients to satisfy almost all their banking needs with minimum human intervention (Tan & Teo, 2000; Jayawardhena & Foley, 2000).

Internet banking is defined as the use of banking services through the computer network (the Internet), offering a wider range of potential benefits to financial institutions due to more accessible and user friendly use of the technology (Yiu, Grant, & Edgar, 2007; Aladwani, 2001). Today we can find on the literature many concepts to identify Internet banking, namely electronic banking, online banking and e-banking. With Internet banking, customers can perform, electronically, a wide range of transactions, such as writing checks, paying bills, transferring funds, printing statements, and inquiring about account balances through the bank's website. Furthermore, Internet banking has a

significant impact on *e-payments*, offering a platform to support many *e-commerce* applications such as online shopping, online auction and Internet stock trading (Lee, 2009; M. Tan & Teo, 2000; Aladwani, 2001).

When Internet banking became popular, it was mainly used as an information presentation, to market the products and services on the bank's website, but with the technological development of secured electronic transactions, more banks have been using it also as a transactional framework (Tan & Teo, 2000; Yiu, Grant & Edgar, 2007). Recently, online banks are underlying their presence in the market, including in Portugal, adopting also other channels, as call centres, but their impact on the whole banking sector has been remote (Tan & Teo, 2000; DECO, 2010).

Pikkarainen, Pikkarainen, Karjaluoto and Pahnila (2004) highlighted two main reasons to the proliferation and development of Internet banking. First, the cost savings by the banks compared with the traditional channels; second, the reduction of branch networks and, therefore, the costs with staff. Jayawardhena and Foley (2000) also identified the benefit of increase the customer base, as using multiple distribution channels (branch networks, Internet banking, mobile banking, etc.) would amplify market coverage by enabling different products to be targeted at different demographic segments. With a larger customer base, banks can profit from marketing and communication, with the possibility of mass customization for each group of clients, as well with innovative products. This is an important issue, because nowadays many organizations are saturated with mass automation and homogenised products and services. In the customer view, there was an increase on the autonomy, with less dependency of the branch banking and, consequently, less time and effort. Recently, the Portuguese Association of Consumers Defence (DECO) performed a study about costs and benefits of Internet banking usage and concluded that users can save more than € 300 per year if they use these services instead of the traditional ones (DECO, 2012). On the Internet platform, users can benefit from financial products that are online exclusive, and then, they may have higher profits than on the traditional channels of banks.

Regarding the profile of Internet banking customers, they have an increased banking activity, acquire more products and maintain higher asset and liability balances, demonstrating that they are more valuable than the traditional ones (Hitt & Frei, 2002;

Xue, Hitt, & Chen, 2011). Additionally, customers who have greater transaction demand and higher efficiency, and reside in areas with a greater density of online banking adopters, are faster to adopt Internet banking. These adopters have also a lower propensity to leave the bank.

Observing the current situation in Portugal, it can be concluded that there are many Internet platforms available in almost all reference banks. Since 2005, the usage of Internet banking services by Portuguese banking consumers has increased by 82 percent, while personal and telephonic contacts have decreased approximately 17 percent (Grupo Marktest, 2011a; Grupo Marktest, 2011b; Grupo Marktest, 2012). Despite this recent increasing on the use of Internet banking services, a high percentage of banking users (approximately 70 percent) are not comfortable with this channel and prefer to use the traditional ones (*Automated Teller Machine* - ATM, personal contact and telephonic contact). Grupo Marktest has done also a characterization of Internet banking adopters and concluded that they are men, young (25 to 34 years) and from medium/upper classes of society. Regarding the type of job, they found that medium/upper management have an adoption rate 2.5 times above the average, with 74 percent of them using it.

Even though the increasing on adoption of this kind of services, consumers still show some reluctance to them, mainly due to risk concerns and trust-related issues (M.-C. Lee, 2009).

II.2.Adoption Models

The acceptance and use of IT systems has been the subject of many researches, and in the past years, several theories that offer new insights have emerged at both the individual and organizational levels and focused on a country or a set of countries (Im, Hong & Kang, 2011). Each of the several models that have been proposed in literature has the same dependent variable, usage or intention to use, but with various antecedents to understand acceptance of technology.

The most well-known theoretical models at individual level that attempted to explain the relationship between user beliefs, attitudes and intentions include *Theory of Reasoned Action* (TRA – Fishbein & Ajzen, 1975), *Theory of Planned Behaviour* (TPB – Ajzen, 1991) and *Technology Acceptance Model* (TAM – F. D. Davis, 1989). TAM was designed to predict information technology acceptance and usage on the job, which perceived usefulness and perceived ease of use are the main determinants of the attitudes (F. D. Davis, 1989). Otherwise, TPB is more focused on the perceived behavioural control, that is, the perceived ease or difficulty of performing the behaviour (Ajzen, 1991). Both these models were based on TRA, which propose is that beliefs influence attitudes that in turn lead to intentions and then consequently generate behaviours (Fishbein & Ajzen, 1975). It is a model drawn from social psychology and one of the most important theories of human behaviour. According to the researchers, attitude (attitude toward performing behaviour) and subjective norms (social pressures to perform behaviour) are considered the determinants of behaviour in TRA.

Venkatesh et al. (2003) provided a comprehensive examination of eight prominent models and derive a *Unified Theory of Acceptance and Use of Technology* (UTAUT) which can explain as much as seventy percent of the variance in intention. The eight models studied by these researchers are TRA, TAM, *Motivational Model* (MM – F. D. Davis, Bagozzi, & Warshaw (1992)), TPB, a hybrid model combining constructs from TAM and TPB (C-TAM-TPB – Taylor & Todd (1995)), *Model of PC Utilization* (MPCU – Thompson, Higgins, & Howell (1991)), *Innovation Diffusion Theory* (IDT – Moore & Benbasat (1996)) and *Social Cognitive Theory* (SCT – Compeau & Higgins (1995)). UTAUT model (Figure 1) postulates that four constructs act as determinants of behavioural intentions and usage behaviour: (i) performance expectancy, (ii) effort expectancy, (iii) social influence, (iv) facilitating conditions. In addition, UTAUT also posits the role of four key moderator variables: gender, age, experience and voluntariness of use.

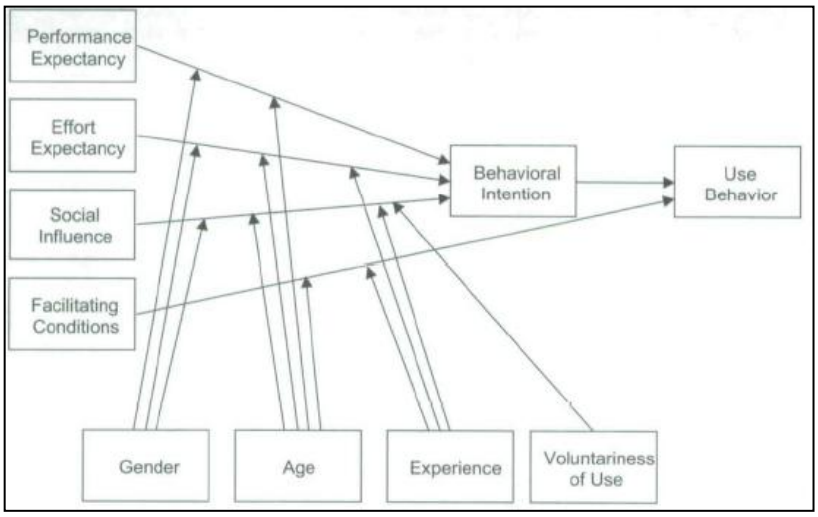


Figure 1 - Research Model of Venkatesh et al. (2003)'s investigation.

Since its inception in 2003, researchers are increasingly testing UTAUT to explain technology adoption. It was tested and applied to several technologies, such as online bulletin boards (Marchewka, Liu, & Kostiwa, 2007), instant messengers (C. P. Lin & Anol, 2008) and web-based learning (Chiu & Wang, 2008). For instance, the adoption factors of Internet banking and mobile banking in Malaysia were investigated by Tan, Chong, Loh and Lin (2010) with the use of this same model; Im et al. (2011) have made an analysis to discover if the UTAUT constructs were affected by the culture, comparing the mp3 player and Internet banking technologies in Korea and U.S.A; and Yuen, Yeow, Lim and Saylani (2010) tested the UTAUT model in two groups of culturally different countries, i.e. the developed (United States and Australia) and developing (Malaysia) countries.

In particular, for Internet banking adoption, it was made many investigations, namely the ones presented on Table 1. In this table we can find the main conclusions of each research and their predictive power explaining intention and usage of Internet banking services, by the r-square (when available).

Theory	Findings	Reference
Technology acceptance model (TAM) and self-efficacy as one of antecedent variables such as risk, Internet experience, facilitating conditions	▪ Self-efficacy plays a prominent role in influencing the Internet banking intention to use in South Korea. ▪ 32.3 percent of intention explained by experience, perceived usefulness and perceived ease of use. ▪ 4.8 percent of usage explained by intention.	K. C. Lee & Chung (2011)
Theory of Planned Behaviour (TPB) and Diffusion of Innovations Theory (DIT)	▪ Attitudinal (relative advantage, compatibility with respondent's values, experience, needs, trialability and risk) and perceived behavioural control factors as the major determinants of intention to adopt Internet banking.	M. Tan & Teo (2000)
Technology acceptance model (TAM)	▪ Perceived usefulness and information on the website were the main factors influencing Internet banking adoption intention. ▪ 12.4 percent of intention explained by the model.	T. Pikkarainen et al. (2004)
Technology acceptance model (TAM) and some extra important control variables	▪ Perceived usefulness and perceived ease of use, resistance to change, trust, age, gender, education and income, explained 85 percent of the variance in attitude towards online banking use. Attitudes towards use explain 83 percent of the variance in intention.	Al-Somali, Gholami, & Clegg (2009)
Technology Acceptance Model (TAM), Personal innovativeness in information technology (PIIT) and perceived risk	▪ Perceived usefulness is the strongest predictor of Internet banking adoption intention, followed by perceived ease of use and perceived risk.	Yiu et al. (2007)
Perceived risk, perceived benefit, technology acceptance model (TAM), theory of planned behaviour (TPB)	▪ 80 percent of intention explained by security risk, financial risk, perceived behaviour control, subjective norm, attitude, perceived benefit and perceived usefulness.	M.-C. Lee (2009)
Extended Technology Acceptance Model (TAM2) and Social Cognitive Theory (SCT)	▪ Both subjective norm and computer self-efficacy indirectly play significant roles in influencing the intention to adopt Internet Banking. ▪ Perceived ease of use has a significant indirect effect on intention to adopt/use through perceived usefulness, while its direct effect on intention to adopt is not significant.	Chan & Lu (2004)
Decomposed Theory of Planned Behaviour (TPB)	▪ The adoption of Internet banking is encouraged by attitudinal factors (features of the web site and perceived usefulness) and impeded by a perceived behavioural control factor (external environment), but not by subjective norms.	Bussakorn & Dieter (2005)

Table 1 - Summary of previous research on Internet banking adoption.

II.3.Prior Research on Perceived Risk

According to Bauer (1960) and Ostlund (1974), the negative consequences that may arise from consumers' actions leads to an important well-established concept in consumer behaviour: perceived risk. Many authors have studied the impact of risk on the adoption of Internet banking and some of them will be discussed.

Kuisma, Laukkanen and Hiltunen (2007) have investigated the resistance to Internet banking and their connections to values of individuals and concluded that both functional and psychological barriers arise from service, channel, consumer and communication. ATM services are still being preferred by the customers, because of their old routine and the Internet's insecurity, inefficiency and inconvenience. Besides the fear of possible misuse of changeable passwords and the lack of an evidence of an official receipt, they found that some customers seem to perceive no performance-to-price value due to the high purchasing costs of a computer and Internet connection. Additionally, non-users also complain about the lack of social dimension, that is, the absence of a service like at a branch.

In a similar way, Rotchanakitumnuai and Speece (2003) investigated how corporate customers perceive barriers to usage of the Internet banking provided by Thailand banks. The findings were that trust and security are the most critical issues, especially in non-users whom have higher levels of worry, do not have confidence to make any financial transactions via the Web and have no intention of adopting Internet banking services.

According to Featherman & Pavlou (2003), perceived risk is defined as "the potential for loss in the pursuit of a desired outcome of using an e-service". The purpose of this research was to discover how important are the risk perceptions to the overall e-services adoption decision, integrating TAM with perceived risk (research model on Figure 2). They identified seven types of risks, namely (i) performance risk, (ii) financial risk, (iii) time risk, (iv) psychological risk, (v) social risk, (vi) privacy risk and (vii) overall risk. The authors stated that it was crucial to include a measure of perceived risk into TAM because consumers identify and value risk when they are evaluating products/services for purchase/adoption, which may create anxiety and discomfort for them. Therefore, regarding perceived risk they tested (i) if e-service's perceived risk reduces their perceived usefulness and adoption; (ii) if perceived ease of use of e-service ease of use significantly reduces perceived risks of usage; (iii) if perceived ease of use influences e-service's adoption. As seen below, perceived risk has been modelled both as a composite variable and decomposed into its theorized sub-facets.

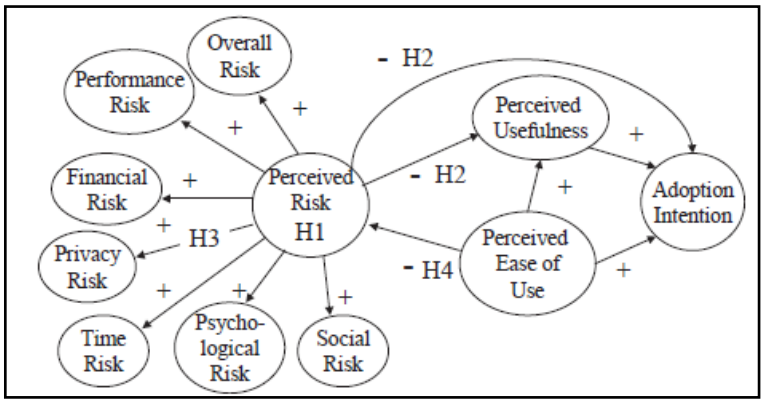


Figure 2 - Research Model of Featherman & Pavlou (2003)'s investigation.

III - RESEARCH MODEL

As seen on last section, UTAUT model is able to explain 70 percent of the variance in usage intention, which is a substantial improvement over any of the eight original models used to build it. Thus, it demonstrates that UTAUT is the most complete model to predict information technologies adoption, and then it will be used on this investigation. According to this model, three constructs are significant direct determinants on intention (performance expectancy, effort expectancy and social influence). Facilitating conditions and intention explain usage behaviour. Regarding the moderating effects, both experience and voluntariness of use are out of the scope of this research. Experience is not evaluated because only one moment in time is being observed; voluntariness of use is not feasible too because nobody is obliged to use Internet banking on this context. As gender and age may have a significant influence on users' acceptance of Internet banking, all of them will be considered (Y.-S. Wang, Y.-M. Wang, H.-H. Lin, & Tang, 2003).

As our investigation merges two sensitive subjects, namely money and Internet, there is always a risk factor that is important to be measured on the process of Internet banking adoption. Users are always afraid of losing money with transactions, with lost passwords, errors on the platform, etc. Therefore, we propose to test the UTAUT on Internet banking, adding a risk factor to the model. In this section, we define each of the determinants from UTAUT and from risk factor and specify the role of key.

Performance expectancy (PE) reflects user perception of performance improvement by using Internet banking on tasks, i.e., it is the degree to which an individual believes that using Internet banking will help to attain gains on performing banking tasks (Venkatesh et al., 2003). It reflects user perception of performance improvement by using Internet banking such as convenient payment, fast response, and service effectiveness (Zhou, Y. Lu, & B. Wang, 2010). According to the authors, it is similar to the perceived usefulness of TAM and the relative advantage of IDT. Effort expectancy (EE) is the degree of ease associated with the use of Internet banking. It is equivalent to the perceived ease of use of TAM and the complexity of IDT. According to UTAUT, effort expectancy positively affects performance expectancy. When users feel that Internet banking is easy to use and does not require much effort, they will have a high

expectation toward acquiring the expected performance; otherwise, their performance expectancy will be low (Zhou et al., 2010). Social influence (SI) reflects the effect of environmental factors such as the opinions of user's friends, relatives, and superiors on user behaviour and is similar to subjective norm of TRA (Venkatesh et al., 2003). Their opinions will affect user's intention to adopt Internet banking services. Facilitating conditions (FC) reflects the effect of organizational and technical infrastructure to support the use of Internet banking, such as user's knowledge, ability, and resources (Venkatesh et al., 2003). It is similar to perceived behavioural control of TPB. Internet banking requires users to have certain skills such as configuring and operating computers, as to connect to the Internet. In addition, users need to bear usage costs such as data service and transaction fees when using Internet banking. If users do not have these necessary financial resources and operational skills, they will not adopt or use Internet banking (Zhou et al., 2010; S.-J. Hong, J. Y. L. Thong, Moon, & Tam, 2008).

Therefore, and according to UTAUT model, it can be postulated that:

H1: The influence of Performance Expectancy (PE) on Behavioural Intention (BI) will be positive and moderated by age and gender, such that it will be stronger for young and men.

H2: The influence of Effort Expectancy (EE) on Behavioural Intention (BI) will be positive and moderated by age and gender, such that it will be stronger for young and women.

H3: The influence of Social Influence (SI) on Behavioural Intention (BI) will be positive and moderated by age and gender, such that it will be stronger for older and women.

H4: The influence of Facilitating Conditions (FC) on Usage Behaviour (UB) will be positive and moderated by age, such that it will be stronger for older.

To maintain consistency with the underlying theory for all of the intention models, it is expected that behavioural intention will have a significant positive influence on technology usage (Venkatesh et al., 2003). It can be hypothesized that:

H5: Behavioural Intention (BI) will have a significant positive influence on Usage Behaviour (UB).

According to Featherman and Pavlou (2003), (i) Performance risk is defined as the possibility of the results not being as they were designed to be and therefore failing to deliver the desired benefits; (ii) Financial risk reflects the potential monetary loss from the initial purchase of the product and their subsequent maintenance; (iii) Time risk occurs when users may lose time making bad purchasing decisions, with researching and making the purchase and learning how to use it; (iv) Psychological risk is defined as the risk that the performance of the product will have a negative effect on the consumer's peace of mind and the potential loss of self-esteem from the frustration of not achieving a buying goal; (v) Social risk reflects the potential loss of status on a social group, as a result of adopting a product or service; (vi) Privacy risk is the potential loss of control over personal information, such as when information about an individual is used without his knowledge; (vii) Finally, Overall risk is a general measure with all criteria together. All these perceived risks compose the perceived risk, being a second order factor of them and then influencing negatively the intention. It is expected that the more the user's aversion to the risk concerns are lowered, the more s/he is likely to adopt internet banking services (Bussakorn & Dieter, 2005).

Thus, perceived risk has been modelled both as a composite variable and decomposed into its theorized sub-facets and we can postulate that:

H6: *Perceived Risk (PCR) is a second order factor of seven risks.*

- ***H6a:*** *Perceived Risk (PCR) will positive influence Performance Risk (PFR).*
- ***H6b:*** *Perceived Risk (PCR) will positive influence Financial Risk (FR).*
- ***H6c:*** *Perceived Risk (PCR) will positive influence Time Risk (TR).*
- ***H6d:*** *Perceived Risk (PCR) will positive influence Psychological Risk (PSR).*
- ***H6e:*** *Perceived Risk (PCR) will positive influence Social Risk (SR).*
- ***H6f:*** *Perceived Risk (PCR) will positive influence Privacy Risk (PR).*
- ***H6g****: Perceived Risk (PCR) will positive influence Overall Risk (OR).*

H7: *Perceived Risk (PCR) will negative influence Behaviour Intention (BI).*

Regarding the effects of perceived usefulness and perceived ease of use on the approach of Featherman and Pavlou (2003), when we focus on the research of Venkatesh et al. (2003), the equivalent constructs are performance expectancy (PE) and effort expectancy (EE). It is expected that only individuals who perceive using Internet

banking as a low risk undertaking would have a tendency to perceive it as useful (Chan & M. Lu, 2004). Also, it is expected that only those who perceive low effort to use Internet banking would have a tendency to perceive it as a not risky service. Thus, we can postulate that:

H8: *Perceived Risk (PCR) will negative influence Performance Expectancy (PE).*

H9: *Effort Expectancy (EE) will negative influence Perceived Risk (PCR).*

From these hypotheses it emerges the conceptual model presented in Figure 3.

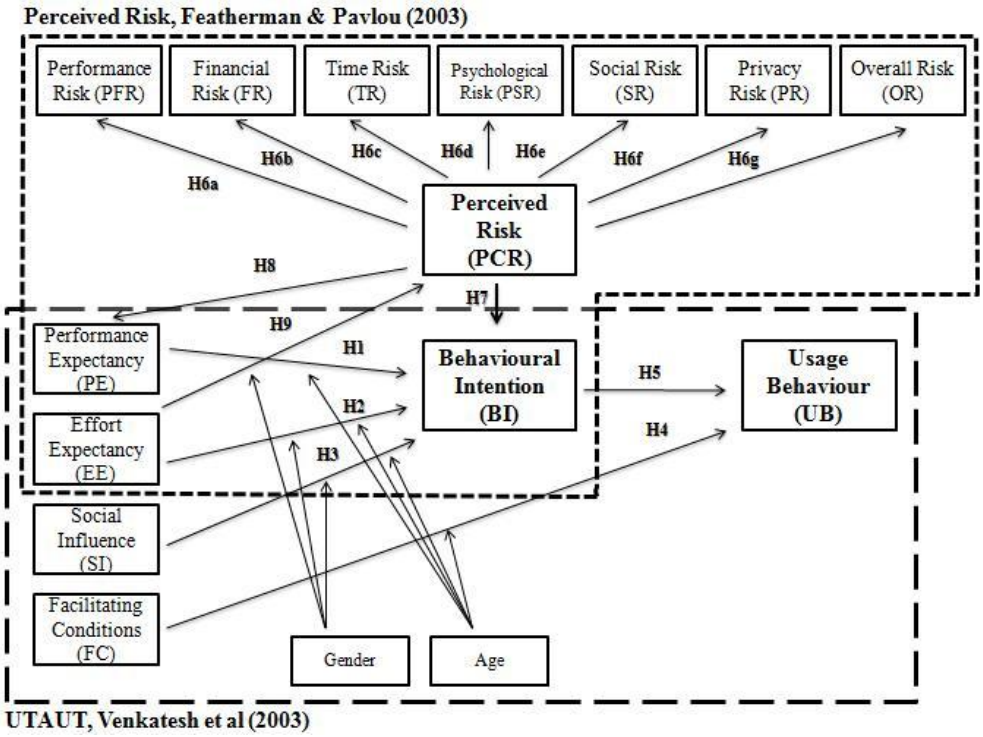


Figure 3 - Research Model.

IV - METHODS

This section is divided in two subsections: (i) the measurement instruments; (ii) data collection.

IV.1. Measurement Instruments

All measurement items were adapted, with slight modifications, from the literature – PE, EE, SI, FC, BI were adopted from Venkatesh et al. (2003) and F. D. Davis (1989); UB from Im et al. (2011); perceived risk constructs from Featherman & Pavlou (2003). The items for all constructs are included in the Appendix.

The questionnaire was initially developed in English, based on the literature, and the final version was translated to Portuguese. A professional translator independently translated the original items in English into Portuguese. The questionnaire was put on the Web through a free Web hosting service.

Most items were measured using seven-point Likert scales, ranging from totally disagree (1) to totally agree (7). Behaviour Intention (BI) was measured by asking respondents about their intentions and plans to use the technology during the next months. To evaluate Usage Behaviour (UB), one item measured users' actual frequencies of Internet banking use (have not used, once a year, once in six months, once in three months, once a month, once a week, once in 4–5 days, once in 2–3 days and almost every day). We also included two demographic questions relating to age and gender. Age was measured in years. Gender was coded using a 0 or 1 dummy variable where 1 represented women.

IV.2. Data Collection

Firstly, a pilot survey (with 100 answers) was conducted (in April of 2012) with the goal of refining the questions and to gain additional comments on the content and structure. The most important change was on the items of Usage Behaviour (UB), that

initially were from Venkatesh et al. (2003), since they generated misunderstandings and the simulation of the PLS estimation with a few samples gave statistically poor results. The items were “I intend to use the system in the next <n> months.”, “I predict I would use Internet Banking in the next <n> months.” and “I plan to use the system in the next <n> months.”. The possible answers were from 1 to +12. Internet banking users understood it as the period that they effectively will use Internet banking (and therefore answered +12) and others as the nearest month that they will use it (that is, next month, with 1 as response). These items were replaced by one from Im et al. (2011), already used in this context. Regarding the other items, a number of suggestions were made about the phrasing and the overall structure of the questionnaire. The suggestions were discussed and some changes were made. The data from the pilot survey was not included on the main survey.

A total number of 726 students and ex-students from a university were contacted by e-mail in May of 2012 with the hyperlink of the survey, and a total of 173 responses were validated. Then, a second e-mail was sent to those who did not answered (with difference of two weeks), and finally, after the refining process, a total of 249 valid cases were analysed (34 percent response rate). To test for nonresponse bias, we compare the sample distribution of the first and second respondents groups. We used the Kolmogorov-Smirnov (K-S) test to compare the sample distributions of the two groups (Ryans, 1974). The K-S test suggests that the sample distributions of the two independent groups do not differ statistically (Ryans, 1974). This means that there is not nonresponse bias. Further, we examined the common method bias by using Harman’s one-factor test (P. M. Podsakoff, MacKenzie, J. Y. Lee, & N. P. Podsakoff, 2003). These tests found no significant common method bias in our dataset.

The majority of respondents (63 percent) assumed that they use Internet banking services one time a week. On the other hand, 14 percent admitted that they are non-users and of those almost all are men with an average age of 27. They are also characterized by low levels of education.

Concerning demographic data (Table 2), 59 percent of the respondents are male and the average age is 30 years. Their education level is elementary and high school for 47 percent of individuals; the others have a degree or a higher level.

Age			Gender			Education		
[18-21[	23	9.2%	Male	146	58.6%	Elementary and High School	116	46.6%
[21-25[	89	35.7%	Female	102	41.0%	Degree	70	28.1%
[25-30[	36	14.5%	Missing	1	0.4%	Post-Graduation	61	24.5%
[30-40[	46	18.5%				Missing	2	0.8%
[40-67[	47	18.9%						
Missing	8	3.2%						

Table 2 - Demographic data of responses.

V - RESULTS

Structural equation modelling (SEM) is a statistical technique for testing and estimating causal relations using a combination of statistical data and qualitative causal assumptions. Researchers acknowledge the possibilities of distinguishing between measurement and structural models and explicitly taking measurement error into account (Henseler, Ringleand, & Sinkovics, 2009). There are two families of SEM techniques: (i) covariance-based techniques and (ii) variance-based techniques. Partial least squares (PLS) is a variance-based technique and it will be used on this investigation once that: (i) all items in our data are not distributed normally ($p<0.01$ based on Kolmogorov-Smirnov's test); (ii) the research model has not been tested in the literature; (iii) the research model is considered as complex. Smart PLS 2.0 M3 (Ringle, Wende, & Will, 2005) was the software used to analyse the relationships defined by the theoretical model.

On the next two subsections we first examine the measurement model in order to assess internal consistency, indicator reliability, convergent validity and discriminant validity and second we test the structural model.

V.1. Measurement Model

Firstly, in order to analyse the indicator reliability, factor loadings should be statistically significant and preferably greater than 0.7 (Chin, 1998; Hair & Anderson, 2010; Henseler et al., 2009). Means, standard deviations, loadings and t-statistic values from items measured are on Table 3. The t-statistic obtained from bootstrapping (250 iterations) show that all loadings are statistically significant at 1%. FC4 item was excluded due to its low loading and lack of statistical significance. Concerning the others, all items were retained. Furthermore, it is possible to conclude that all items have loadings greater than 0.7, except the item of SI5 (that is on the threshold), suggesting internal consistency.

Construct			Mean	StdDev	Loading	t-Statistic
Performance Expectancy (PE)		PE1	6.14	1.45	0.92	66.80
		PE2	5.95	1.56	0.88	23.61
		PE3	5.70	1.57	0.93	64.28
		PE4	5.52	1.64	0.89	45.10
Effort Expectancy (EE)		EE1	5.51	1.48	0.91	42.41
		EE2	5.66	1.46	0.94	66.48
		EE3	5.61	1.33	0.93	52.56
		EE4	5.79	1.32	0.92	50.16
Social Influence (SI)		SI1	3.91	1.85	0.90	17.87
		SI2	3.86	1.85	0.91	21.97
		SI3	2.67	1.71	0.71	6.12
		SI4	2.72	1.68	0.73	6.64
		SI5	2.41	1.54	0.67	5.64
Facilitating Conditions (FC)		FC1	6.08	1.29	0.91	42.50
		FC2	5.85	1.40	0.94	71.01
		FC3	5.76	1.38	0.92	61.44
Perceived Risk	Performance Risk (PFR)	PFR1	2.88	1.50	0.87	38.83
		PFR2	3.20	1.53	0.86	37.70
		PFR3	3.08	1.50	0.92	83.88
		PFR4	3.08	1.49	0.93	69.09
		PFR5	2.88	1.53	0.89	44.62
	Financial Risk (FR)	FR1	3.06	1.66	0.89	51.20
		FR2	3.73	1.65	0.87	45.48
		FR3	3.19	1.65	0.93	97.33
		FR4	3.28	1.68	0.91	43.95
	Time Risk (TR)	TR1	2.43	1.62	0.77	17.21
		TR2	2.30	1.54	0.91	53.44
		TR3	2.13	1.36	0.94	69.83
		TR4	2.23	1.45	0.88	28.06
	Psychological Risk (PSR)	PSR1	1.92	1.41	0.97	75.75
		PSR2	1.79	1.29	0.97	128.07
	Social Risk (SR)	SR1	1.57	1.11	0.99	179.75
		SR2	1.56	1.10	0.99	230.05
	Privacy Risk (PR)	PR1	3.40	1.67	0.95	131.32
		PR2	3.49	1.70	0.93	69.22
		PR3	3.94	1.70	0.89	56.34
	Overall Risk (OR)	OR1	2.62	1.41	0.93	77.16
		OR2	2.62	1.43	0.96	135.00
		OR3	2.53	1.39	0.95	112.07
		OR4	2.43	1.38	0.92	48.88
		OR5	2.89	1.50	0.87	36.87
Behaviour Intention (BI)		BI1	5.71	1.84	0.98	151.22
		BI2	5.70	1.84	0.99	471.95
		BI3	5.69	1.84	0.99	182.59
		BI4	5.76	1.80	0.98	157.31
		BI5	5.53	1.97	0.95	62.63
Usage Behaviour (UB)		UB	6.05	2.80	NA	NA

Note: NA = Not Applicable

Table 3 - Means, standard deviations and loadings for the measurement model.

Secondly, to evaluate construct's reliability, two indicators were used – composite reliability (CR) and Cronbach's alpha (CA). The most usual criterion is CA, providing an estimate for the reliability based on the indicator intercorrelations and assuming that all indicators are equally reliable (Henseler et al., 2009). According to Hair and Anderson (2010), CR quantifies the reliability and internal consistency of each construct and the extent to which the items represent the underlying constructs. Additionally, CR takes into account that indicators have different loadings (and Cronbach's alpha not), being more suitable for PLS, which prioritizes indicators according to their individual reliability (Henseler et al., 2009). As seen in Table 4, CR and CA for each construct are above the expected threshold of 0.7, showing evidence of internal consistency.

In order to assess convergent validity, average variance extracted (AVE) was used. The AVE is the amount of indicator variance that is accounted by the underlying items of construct and should be higher than 0.5, so that latent variable explain more than half of the variance of its indicators (Hair & Anderson, 2010; Henseler et al., 2009). As seen also Table 4, AVE for each construct is above the expected threshold of 0.5, ensuring convergent validity.

Finally, to grant discriminant validity, the square root of AVE should be greater than the correlations between the construct (Henseler et al., 2009). This can be verified also in Table 4 for all constructs. We conclude that all the constructs show evidence of discrimination. Additionally, another criteria that assesses discriminant validity is the cross loadings, that should be lower than the loadings of each indicator (Hair & Anderson, 2010). This was also analysed and we verified that any indicator has loadings with lower values than their cross loadings.

	Mean	SD	CR	CA	PE	EE	SI	FC	PCR	BI	UB	Age	Gender
PE	5.84	1.41	0.95	0.93	**0.91**								
EE	5.65	1.29	0.96	0.94	0.78***	**0.92**							
SI	3.16	1.41	0.89	0.87	0.30***	0.31***	**0.79**						
FC	5.90	1.25	0.95	0.92	0.71***	0.82***	0.26***	**0.93**					
PCR	2.69	1.12	0.97	0.97	-0.26***	-0.30***	0.16**	-0.32***	**0.75**				
BI	5.68	1.81	0.99	0.99	0.68***	0.68***	0.26***	0.65***	-0.38***	**0.98**			
UB	5.61	1.97	NA	NA	0.64***	0.61***	0.26***	0.60***	-0.35***	0.90***	**NA**		
Age	29.14	12.03	NA	NA	0.13*	0.11	0.05	0.08	-0.07	0.18**	0.11	**NA**	
Gender	0.58	0.50	NA	NA	-0.13*	-0.09	-0.02	-0.06	0.17**	-0.12	-0.09	-0.19**	**NA**

Notes: (i) Diagonal elements are the square root of the average variance extracted (AVE).
(ii) *p < 0.05; **p < 0.01; ***p < 0.001; all other correlations are insignificant.
(iii) PE: performance expectancy; EE: effort expectancy; SI: social influence; FC: facilitating conditions; PCR: perceived risk; BI: behavioural intention; UB: usage behaviour.
(iv) NA = not applicable.

Table 4 - Means, standard deviations, correlations and reliability and validity measures (CR, CA and AVE) of latent variables.

V.2. Structural Model

Finally, as the assessment of construct reliability, indicator reliability, convergent validity and discriminant validity of the constructs are satisfactory, it is possible to analyse the structural model. The models tested were UTAUT and perceived risk (PCR) (UTAUT+PCR – the main model) with interaction effects (D+I) and without them (D) to understand if age and gender had influence on the intention and usage. Then, it was also tested UTAUT (without perceived risk (PCR)) and also with direct effects only (D) and adding interaction effects (D+I). Table 5 shows path coefficients and r-squares for each model tested. Chin (1998) stated that r-squares of the structural model should be above 0.2, which is demonstrated both in intention and usage and in all models estimated, as seen also in Table 5. By the comparison of the estimated models it is possible to conclude that on intention, moderating effects have always impact in r-square, increasing it (0.52 vs. 0.56 in UTAUT and 0.56 vs. 0.60 in UTAUT+PCR). In a similar way, when we add perceived risk to UTAUT model, r-square also increases (0.52 vs. 0.56 with direct effects only and 0.56 vs. 0.60 with direct and interaction effects). On the other hand, when we observe usage, neither moderating effects nor perceived risk have impact on it, because the r-square is always the same (0.81).

	UTAUT		UTAUT + PCR	
	D	**D + I**	**D**	**D + I**
Behaviour Intention				
R^2	0.52	0.56	0.56	0.60
Performance Expectancy (PE)	0.37***	0.34***	0.35***	0.32***
Effort Expectancy (EE)	0.38***	0.39***	0.40***	0.33***
Social Influence (SI)	0.03	0.03	0.09*	0.09*
Perceived Risk (PCR)			-0.30***	-0.20***
Age		0.12*		0.11*
Gender		0.00		0.04
PE * Age		0.12		0.11
PE * Gender		0.12		0.13
EE * Age		-0.16		-0.17
EE * Gender		0.04		-0.02
SI * Age		-0.04		-0.04
SI * Gender		-0.02		-0.01
PE * Gender * Age		-0.13		-0.13
EE * Gender * Age		-0.19		-0.12
SI * Gender * Age		0.04		0.03
Usage Behaviour				
R^2	0.81	0.81	0.81	0.81
Facilitating Conditions (FC)	0.03	0.03	0.03	0.03
Behaviour Intention (BI)	0.88***	0.89***	0.88***	0.89***
Age		-0.05		-0.05
FC * Age		0.01		0.01

Notes: (i) *p < 0.05; **p < 0.01; ***p < 0.001; all other path coefficients are insignificant.
(ii) PE: performance expectancy; EE: effort expectancy; SI: social influence; FC: facilitating conditions; PCR: perceived risk; BI: behavioural intention; UB: usage behaviour.

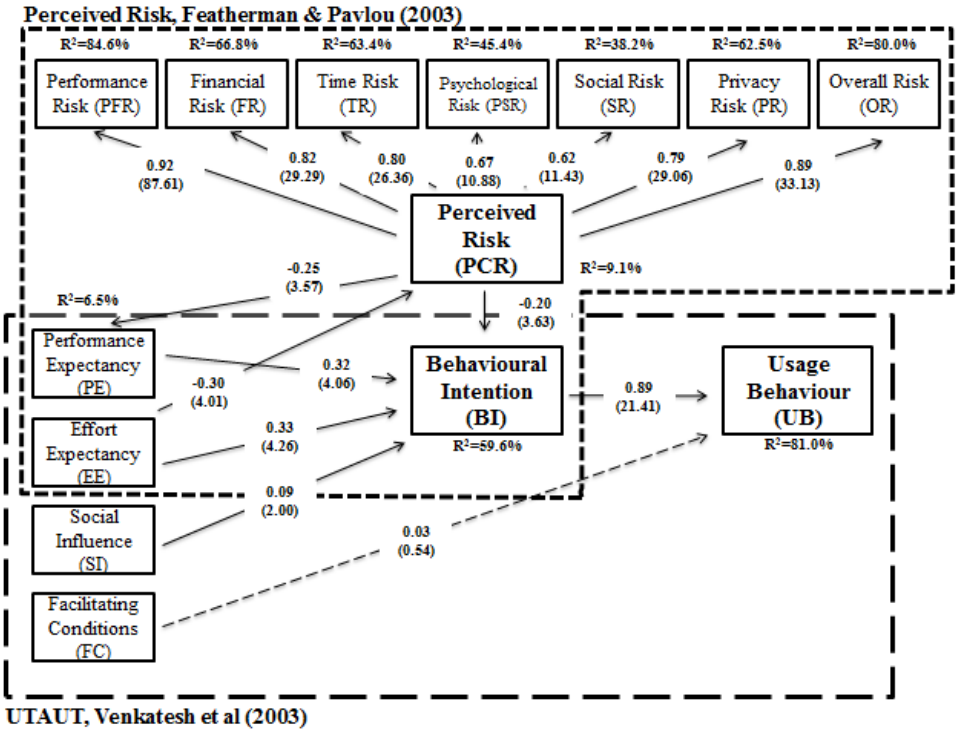
Table 5 - Structural model with path coefficients and r-squares for models with UTAUT and UTAUT and perceived risk, with direct (D) effects only and with direct and interaction effects (D+I).

With these facts, it is possible to conclude that our model, that added perceived risk (PCR) to UTAUT model, with their moderating effects, has a better performance explaining the intention that all the others. From now, we will focus our analysis on the main model, that is, UTAUT+PCR with moderating effects. Path coefficients and r-squares of this model are presented on Figure 4.

We also calculated t-statistics derived from bootstrapping (250 iterations). Most direct effects are statistically significant, as performance expectancy ($\hat{\beta}$ = 0.32; p<0.001), effort expectancy ($\hat{\beta}$ = 0.33; p<0.001), social influence ($\hat{\beta}$ = 0.09; p<0.05) and perceived

risk ($\hat{\beta}$ = -0.20; p<0.001) over intention. To explain usage facilitating conditions is not statistically significant ($\hat{\beta}$ = 0.03; p>0.05), and behaviour intention is statistically significant ($\hat{\beta}$ = 0.89; p<0.001). In summary, all of the direct effects are statistically significant for intention, and for usage only facilitating conditions is not statistically significant.

All of the interaction effects (as seen in Table 5), are not statistically significant. Only the direct effect of age on intention is statistically significance ($\hat{\beta}$ = 0.11; p<0.05).



Note: In order to simplify, the figure are only presented direct effects. Dashed lines mean no statistically significance at 5%.

Figure 4 - Structural model (UTAUT+PCR – D+I) with path coefficients and r-squares.

VI - DISCUSSION

The discussion chapter is comprised in three sections: (i) theoretical implications; (ii) managerial implications; (iii) limitations and future research.

VI.1. Theoretical Implications

The main theoretical implication of this research is that perceived risk construct increases the predictive power of UTAUT model explaining intention. The r-square value showed that performance expectancy (PE), effort expectancy (EE), social influence (SI) and perceived risk (PCR) together accounted for 60 percent of the variance of behaviour intention (BI). By adding perceived risk to UTAUT, our research contributed to an increase of 4 p.p. of variance explained (56 percent UTAUT without perceived risk). Regarding usage behaviour, UTAUT+PCR model explained 81 percent of its variance. Comparing with other researches that investigated Internet banking adoption, our study presents a stronger predictive power, for instance T. Pikkarainen et al. (2004) used TAM and explained 12.4 percent of intention, with perceived usefulness and information on the website as the main determinants. K. C. Lee & Chung (2011) also applied TAM and added self-efficacy as one of antecedent variables such as risk, Internet experience and facilitating conditions in Sought Korea's users. Intention was explained by 32.3 percent by Internet experience, perceived usefulness and perceived ease of use. Furthermore, usage presented an r-square of 4.8 percent, which is below our results.

Table 6 presents the outcomes of hypotheses tested. The results of the model showed that, contrary to our hypothesis, the effect of facilitating condition (FC) construct from UTAUT over usage (UB) was not significant. This suggests that our respondents do not concern about the surrounding environment (necessary infrastructures, knowledge, capabilities, etc.) to influence their usage of Internet banking. As observed in some other researches, as K. C. Lee and Chung (2011) and Al-Somali et al. (2009) the effects of PE and EE over BI were substantial, meaning that individuals care about the outcomes of using Internet banking and the necessary effort to expend in order to use it.

With a low magnitude, SI showed also an effect on BI, meaning that our respondents concern about environmental factors such as the opinions of user's friends, affecting their intention to adopt Internet banking. The impact of BI on usage behaviour (UB) was also substantial, which indicates that Internet banking users are more likely to use the system if they had the intention to use it.

Hypotheses	Independent Variable	→	Dependent Variable	Moderators	Findings	Conclusion
H1	Performance Expectancy	→	Behaviour Intention	Age, Gender	Positive and statistically significant ($\hat{\beta}$=0.32; p<0.001). Effect not significant with moderators.	Partial Supported
H2	Effort Expectancy	→	Behaviour Intention	Age, Gender	Positive and statistically significant ($\hat{\beta}$=0.33; p<0.001). Effect not significant with moderators.	Partial Supported
H3	Social Influence	→	Behaviour Intention	Age, Gender	Positive and statistically significant ($\hat{\beta}$=0.09; p<0.05). Effect not significant with moderators.	Partial Supported
H4	Facilitating Conditions	→	Usage Behaviour	Age	Non-significant effect.	Not Supported
H5	Behaviour Intention	→	Usage Behaviour	None	Positive and statistically significant ($\hat{\beta}$=0.89; p<0.001).	Supported
H6	Perceived Risk	→	Seven Risks	None	Positive and statistically significant in all seven risks.	Supported
H7	Perceived Risk	→	Behaviour Intention	None	Negative and statistically significant ($\hat{\beta}$=-0.20; p<0.001).	Supported
H8	Perceived Risk	→	Performance Expectancy	None	Negative and statistically significant ($\hat{\beta}$=-0.25; p<0.001).	Supported
H9	Effort Expectancy	→	Perceived Risk	None	Negative and statistically significant ($\hat{\beta}$=-0.30; p<0.001).	Supported

Table 6 - Hypotheses conclusions.

Regarding perceived risk part of the model, it is demonstrated evidence for a second-order composite perceived risk variable. Performance, financial, time and privacy risks proved to be the most salient concerns for perceived risk, that is, the ones related with performance. Social and psychological risks were less salient. The negative effects of PCR over BI and PE were also proved.

Concerning the interaction effects, we did not find support for neither of the ones tested. We concluded that age explain behaviour intention of Internet banking service ($\hat{\beta}$ = 0.11; $p<0.05$; on the main model). This means that if respondents are older, they will have more intention to use Internet banking.

VI.2. Managerial Implications

The results of our study carry several implications for practitioners. First of all, two necessary points that banking institutions should grant on their Internet banking platforms are the performance and the ease of use (the strongest effects from UTAUT model that explain intention). For this purpose, institutions could promote clarification workshops, to teach people to use the platform and explain the main benefits of Internet banking (Bussakorn & Dieter, 2005). Additionally, previous consumer behaviour and information system research has highlighted that perceived risk is one of the majors' inhibitor to purchasing on the web and adoption of an *e-service* and therefore bank institutions should mitigate it (Featherman & Pavlou, 2003). The focus, as seen on last subsection, should be on performance risks, namely time, financial, performance and privacy. Managers should advertise to potential users that Internet banking is not a risky service, by promoting information of security and trust on the platform. They should also prevent user concerns about computer crimes, invasion of privacy and, overall, attempt to provide transactions without errors and allocate sufficient resources to correct it, if necessary. The usage of a secure channel from the consumer's personal computer to the bank server and handling of sessions with key encryption are two important issues that institutions should make sure that users know. Additional effective risk-reducing strategies may include money back guarantees and prominently displayed consumer satisfaction guarantees, so that consumers feel more comfortable and safe with the system.

Second, both Internet banking managers and users can take financial advantage of the adoption. With the self-service consumer software-based service via Internet, banks can decrease costs with branches, by encouraging and supporting the usage of the platforms. Users can also decrease their costs, by not paying for transactions, benefiting from

online exclusive products with higher profits, etc. Additionally, Internet banking can provide consumers utility gains measured in convenience and efficiency.

VI.3. Limitations and Future Research

Our study had several limitations, mainly in sampling. The respondents were mainly young people (mean age of 30 years) and highly educated (53 percent has a degree or more than it), whose behaviour might differ somewhat from the population average. They are generally more innovative and faster to accept new technologies and this may have biased the results. It is highly likely that consumers that are older and less educated, or possess reduced computing/Internet skills would perceive more difficulty in use Internet banking and higher inherent usage risks. Thus, first, future research can be built based on this study by testing this model in different age groups. Furthermore, it could be interesting to apply the model to other countries and also other technologies.

Second, future research can be done based on this study by applying the same assumptions, but with the extended UTAUT (Venkatesh, James Y L Thong, & Xu, 2012). UTAUT2 incorporates not only the main relationships from UTAUT, but also new constructs and relationships that extend the applicability of UTAUT from the organizational to the consumer context. The researchers added three new constructs into the model: (i) hedonic motivation; (ii) price value; (iii) habit. Another change was that, while the original UTAUT only proposed a path from facilitating conditions to actual behaviour, here they proposed to also influence behavioural intention. These adjustments can produce improvement in the variance explained in behavioural intention. UTAUT2 model was not used on this investigation because when it was published, we were already on an advanced phase of the investigation.

Thirdly, future research can identify other relevant variables that better explain intention and usage of Internet banking, namely the trust (on bank, on Internet, etc.). This is a variable that we also found important during the investigation.

VII - CONCLUSIONS

The main objective of this research was to combine UTAUT model with a perceived risk factor, in order to understand the determinants of the Internet banking adoption. Data was collected (249 valid answers were obtained) and PLS estimation analysis was performed to measure users' intention and usage of Internet banking. The reliability of the model was verified and supported the validity of our UTAUT and perceived risk instrument for evaluating Internet banking acceptance. Estimation results on path coefficients also indicate the significance of our model. We found that individual expectations regarding performance expectancy, effort expectancy, social influence and perceived risk were the most important to explain users' intention (60 percent of its variance). Concerning the usage, behaviour intention showed significant impact (81 percent of its variance). On the other hand, facilitating conditions (UTAUT latent variable) was not important to explain usage. With this research we concluded that perceived risk is a stronger factor to predict intention to use Internet banking and then gives more predictive power to UTAUT by itself.

APPENDIX

Constructs	Items		Source
Performance Expectancy (PE)	Internet Banking is useful to carry out my tasks.	PE1	Venkatesh et al. (2003)
	I think that using Internet Banking would enable me to conduct tasks more quickly.	PE2	
	I think that using Internet Banking would increase my productivity.	PE3	
	I think that using Internet Banking would improve my performance.	PE4	
Effort Expectancy (EE)	My interaction with Internet Banking would be clear and understandable.	EE1	Venkatesh et al. (2003)
	It would be easy for me to become skilful at using Internet Banking.	EE2	
	I would find Internet Banking easy to use.	EE3	
	I think that learning to operate Internet Banking would be easy for me.	EE4	
Social Influence (SI)	People who influence my behaviour think that I should use Internet Banking.	SI1	Venkatesh et al. (2003)
	People who are important to me think that I should use Internet Banking.	SI2	
	People in my environment who use Internet Banking services have more prestige than those who do not.	SI3	
	People in my environment who use Internet Banking services have a high profile.	SI4	
	Having Internet Banking services is a status symbol in my environment.	SI5	
Facilitating Conditions (FC)	I have the resources necessary to use Internet Banking.	FC1	Venkatesh et al. (2003)
	I have the knowledge necessary to use Internet Banking.	FC2	
	Internet Banking is not compatible with other systems I use.	FC3	
Performance Risk (PFR)	Internet Banking might not perform well and create problems with my credit.	PFR1	Featherman & Pavlou (2003)
	The security systems built into the Internet Banking system aren't strong enough to protect my checking account.	PFR2	
	The probability of something's wrong with the performance of Internet Banking is high.	PFR3	
	Considering the expected level of service performance of Internet Banking, for me to sign up and use, it would be risky.	PFR4	
	Internet Banking servers may not perform well and process payments incorrectly.	PFR5	
Financial Risk (FR)	The chances of losing money if I use Internet Banking are high.	FR1	Featherman & Pavlou (2003)
	Using an Internet-bill-payment service subjects my checking account to potential fraud.	FR2	
	My signing up for and using an Internet Banking service would lead to a financial loss for me.	FR3	
	Using an Internet-bill-payment service subjects my checking account to financial risk.	FR4	
Time Risk (TR)	I think that if I use Internet Banking then I will lose time due to having to switch to a different payment method.	TR1	Featherman & Pavlou (2003)
	Using Internet Banking would lead to a loss of convenience of me because I would have to waste a lot of time fixing payments errors.	TR2	
	Considering the investment of my time involved to switch to (and set up) Internet Banking, it would be risky.	TR3	
	The possible time loss from having to set-up and learn how to use e-bill payment is high.	TR4	
Psychological Risk (PSR)	I think that Internet Banking will not fit in well with my self-image or self-concept.	PSR1	Featherman & Pavlou (2003)
	If I use Internet Banking services, it would lead me to a psychological loss because it would not fit in well with my self-image or self-concept.	PSR2	
Social Risk (SR)	If I use Internet Banking, it will negatively affect the way others think of me.	SR1	Featherman & Pavlou (2003)
	My signing up for and using Internet Banking would lead to a social loss for me because my friends and relatives would think less highly of me.	SR2	
Privacy Risk (PR)	The chances of using the Internet Banking and lose control over the privacy of my payment information is high.	PR1	Featherman & Pavlou (2003)
	My signing up and using of Internet Banking would lead me to a loss of privacy because my personal information would be used without my knowledge.	PR2	
	Internet hackers (criminals) might take control of my checking account if I use Internet Banking services.	PR3	
Overall Risk (OR)	On the whole, considering all sorts of factors combined, it would be risky if I use Internet Banking.	OR1	Featherman & Pavlou (2003)
	Using Internet Banking to pay my bills would be risky.	OR2	
	Internet Banking is dangerous to use.	OR3	
	I think that using Internet Banking would add great uncertainty to my bill paying.	OR4	
	Using Internet Banking exposes me to an overall risk.	OR5	
Behavioural Intention (BI)	I intend to use the system in the next months.	BI1	Venkatesh et al. (2003); F. D. Davis, (1989)
	I predict I would use Internet Banking in the next months.	BI2	
	I plan to use the system in the next months.	BI3	
	I intend to consult the balance of my account on the platform of Internet banking.	BI4	
	I intend to perform a transfer on the platform of Internet banking.	BI5	
Usage Behaviour (UB)	What is your actual frequency of use of Internet Banking services? i) have not used; ii) once a year; iii) once in six months; iv) once in three months; v) once a month; vi) once a week; vii) once in 4–5 days; viii) once in 2–3 days; ix) almost every day.	UB	Im et al. (2011)

Table 7 - The items.

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